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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/347,182	07/02/1999	STEVE J. SHATTIL		3526

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EXAMINER

LY, NGHI H

ART UNIT PAPER NUMBER

2682

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



Office Action Summary

Application No.

09/347,182

Applicant(s)

SHATTIL, STEVE J.

Examiner

Nghi H. Ly

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 35-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 and 35-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of group I (consisting of claims 1-33, 35-39) in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, 9-33 and 35-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Agee (US 6,128,276).

Regarding claims 1, 12-15, 20, 23, 31, 35 and 38, Agee teaches a method for spatial demultiplexing interfering signals (see abstract) comprising the steps of transforming a discrete-time input signal into a plurality of spectral components (see fig.12 box 330), computing a set of weights for each of a plurality of channels with respect to channel fading (see fig.7b box 191 and column 12 lines 54-58), applying the weights to the spectral components (also see fig.7b box 191), and combining the

weighted spectral components to cancel co-channel interference (see column 14 lines 64-66 and fig.12 number 332).

Regarding claim 2, Agee further teaches the input signal is obtained by sampling at least one spread-spectrum signal (see column 11 lines 16-19).

Regarding claim 3, Agee further teaches the input signal is obtained by sampling at least one received multicarrier signal (see column 26 lines 40-44).

Regarding claim 4, Agee further teaches the input signal is obtained by sampling at least one code division multiple access signal (see column 27 lines 30-34).

Regarding claims 5 and 7, Agee further teaches the input signal is obtained by sampling at least one discrete-time signal (see column 13 lines 44-61).

Regarding claim 6, Agee further teaches the input signal is obtained by sampling at least one continuous-time signal (see column 13 lines 44-61).

Regarding claim 9, Agee further teaches the discrete-time input signal is transformed into spectral components using an N-point discrete Fourier transform (see column 3 lines 25-27).

Regarding claims 10 and 11, Agee further teaches the step of transforming the discrete-time input signal into the plurality of spectral components includes a spectral filtering step in which only non-redundant spectral components are passed (see column 27 lines 43-47).

Regarding claims 16 and 37, Agee further teaches the discrete-time input signal is received from a single antenna element (see fig.12 one antenna 326).

Regarding claim 17, Agee further teaches the discrete-time input signal is received from an antenna array (see fig.9 antenna 262 and 263).

Regarding claim 18, Agee further teaches the discrete-time input signal is a multicarrier signal wherein each carrier of the multicarrier signal has a different spreading code and the step of transforming the discrete-time input signal into the plurality of spectral components includes a step of decoding the multicarrier signal (see fig.9 box 276).

Regarding claim 19, Agee further teaches the discrete-time input signal is derived from at least two receive signals transmitted by at least one transmitter wherein the receive signals are transmitted with different beam patterns (see column 36 lines 26-29).

Regarding claims 21 and 22, Agee further teaches the step of transforming the discrete input signals includes a step of separating a plurality of interfering information signals modulated on each of the spectral components and passing the information signals to the step of separating the interfering signals (see column 27 lines 43-47).

Regarding claims 24 and 25, Agee further teaches each of the transmit signals has a different amplitude-versus-frequency profile (see column 17 lines 21-26).

Regarding claims 26, 27, 28 and 29, Agee further teaches at least two of the transmitters are co-located (see fig.1 number 18).

Regarding claims 30, Agee further teaches the transmit signals have constant modulus (see column 22 lines 18-25).

Regarding claims 32, Agee further teaches the diversity components are polarization-diversity components (see column 1 lines 57-59).

Regarding claims 33, Agee further teaches diversity components are frequency-diversity components (see column 36 lines 61-65).

Regarding claims 36, Agee further teaches the diversity receiver includes a filter bank (see fig.7b box 182).

Regarding claims 39, Agee further teaches the spatial demultiplexer separates received signals by comparing received signals to a constellation of points (see column 17 lines 50-54).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Agee (US 6,128,276) in view of Raleigh et al (US 5,809,422).

Regarding claim 8, Agee teaches the discrete-time input signal is produced by sampling at least one received signal at a uniform sampling rate. Agee does not specifically disclose the received signal passes through an anti-aliasing filter before being sampled. Raleigh teaches the received signal passes through an anti-aliasing filter before being sampled (see column 10 line 56 to column 11 line 6). Therefore, it

Art Unit: 2682

would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Raleigh into the system of Agee in order to reduce the exemplary Msps rate of the baseband output of the multiplier (see Raleigh column 10 line 67 to column 11 line 1).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tsujimoto (US 6,075,808) teaches spread spectrum time diversity communication system.

b. Fujimoto (US 6,115,426) teaches adaptive communication apparatus.

c. Abu-Dayya (US 5,991,273) teaches determining SINR in a communication system.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghi H. Ly whose telephone number is (703) 605-5164. The examiner can normally be reached on 8:30 am-5:30 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703) 308-6739. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

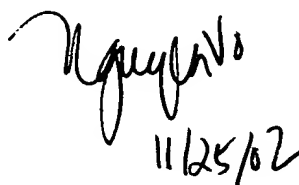
Art Unit: 2682

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Nghi H. Ly



November 22, 2002


11/25/02

NGUYENT.VO
PRIMARY EXAMINER